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**APPENDIX N**

**SUPPLEMENTAL REGULATION AND RESOURCE  
INFORMATION**



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## SUPPLEMENTAL REGULATION AND RESOURCE INFORMATION

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### N.1 CHAPTER 3 SUPPLEMENTAL REGULATION AND RESOURCE INFORMATION

This appendix serves as a supplemental guide to Chapter 3 discussions and contains the laws, regulations, and programs associated with the various resources discussed in Chapter 3. Also provided in this appendix is additional resource information that may be of interest to some readers, but is not necessarily required in the overall resource discussions.

### N.2 LAND USE

#### N.2.1 Federal Land Use Regulations

##### ***Coastal Zone Management Act, 16 U.S.C. 1451 et seq***

Federal coastal zone management (CZM) enforcement authority (Public Law 92-583), as amended, has been delegated to the State of Hawai'i (Chapter 205A, Hawai'i Revised Statutes, as amended). Other than the review of federal applicants, federal permits, or federal activities, state CZM review authority has been delegated to the county level through special management area (SMA) controls. Each federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone must be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of the Federally approved Hawai'i Coastal Zone Management Program. The CZMA (16 USC 1453(1)) excludes federal lands from the coastal zone and therefore activities which only affect only federal lands are not subject to the above mentioned requirements regarding consistency.

##### ***Farmland Protection Policy Act***

The Farmland Protection Policy Act (FPPA) (P.L. 97-98, Sec. 1539-1549; 7 U.S.C. 4201, et seq.) is intended to minimize the extent to which Federal activities contribute to the conversion of farmland to nonagricultural uses. It also stipulates that federal programs

be compatible with state, local, and private efforts to protect farmland—for example, Hawaii’s land use law (Act 187) which designates agricultural district lands.

Federal agencies are required to examine the impact of any activity that would convert farmland. Under the FPPA, “farmland” includes all land defined as Prime farmland, Unique farmland, and Other farmland of statewide or local importance. Agencies have the option of determining whether a site contains farmland—and therefore falls under the Act—without input from the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), which is charged with FPPA oversight. Because portions of the South Range Acquisition Area, portions of the West PTA Acquisition Area and PTA Trail easement, as well as segments of the Dillingham Trail and Helemanō Trail easements, may be subject to the requirements of the FPPA, the Army has requested a farmland determination from the NRCS, which evaluates the impacts of converting farmland areas to nonagricultural use. The determination will include an impact rating.

***Army Regulation 210-21, Army Ranges and Training Land Program***

AR 210-21 assigns responsibilities and prescribes policies, procedures, and guidance for determining training land requirements. Documentation required under this regulation includes Land Use Requirement Studies, to determine whether a training land shortfall exists, and Range and Training Land Program (RTLTP) Development Plans that compile installation range and training land projects.

- The RTLTP Land Use Requirement Study (Nakata Planning Group LLC. 2002b) quantifies the 25<sup>th</sup> ID(L) and USARHAW training land requirements and surveys the sufficiency of lands currently under Army control and available for training. The study analyzes training land requirements for a light division with two infantry brigades and makes recommendations based on guidance from training circulars, Army regulations, and ARTEP mission training plans. In addition, the study analyzes the impact of transforming one brigade into an Interim Brigade Combat Team, while the remaining brigade transforms as a Legacy Force light infantry brigade.
- The RTLTP Development Plan (Nakata Planning Group LLC. 2002a) provides a view of available assets, identifies the users (customers), and establishes the training requirements based on Army training doctrine and resource guidance. It establishes current requirements and utilization levels for available training assets, providing a near-term and long-term project plan for training, public works, and environmental planners. The projects identified in the RTLTP Development Plan consider the impacts on the 25<sup>th</sup> ID(L) and USARHAW’s mission, economic resources, environmental stewardship, and potential for productivity enhancements.

### ***Integrated Natural Resources Management Plans***

Integrated Natural Resources Management Plans (INRMPs) are comprehensive plans for the management of installation resources, including recreation resources. The following plans were reviewed for the recreation section of the document:

- Integrated Natural Resources Management Plan and Environmental Assessment/Finding of No Significant Impact 2002-2006 O'ahu August 2001a (USARHAW and 25th ID [L] 2001a). This document addresses the following installations: Dillingham Military Reservation, Kahuku Training Area, Kawaihoa Training Area, Makua Military Reservation, Schofield Barracks East Range, and Schofield Barracks Military Reservation.
- Integrated Natural Resources Management Plan and Environmental Assessment/Finding of No Significant Impact 2002-2006 Pōhakuloa Training Area. August 2001b (USARHAW and 25th ID [L] 2001b).

### ***Army Integrated Training Area Management (ITAM) Program***

The Army Integrated Training Area Management (ITAM) program provides a decision-making process and an action-oriented land management program to integrate Army training and other mission requirements for land use with sound natural resource principles. The objectives, responsibilities and policies for the ITAM program are set forth in AR 350-4, ITAM. Within the 25<sup>th</sup> ID (L) and USARHAW, ITAM is under the direct supervision of the G3-Director of Plans, Training and Mobilization (DPTM), Range Division Hawaii. The ITAM program is used to help balance environmental compliance and natural resources management needs with the installation's mission to provide realistic training lands for active and reserve forces. ITAM is intended to bridge the mission training requirements and the natural and cultural resource compliance and prevention requirements.

## **N.2.2 State Land Use Regulations**

### ***Hawai'i State Plan***

In 1978, the state completed a Hawai'i State Plan to improve the planning process, to increase the effectiveness of government and private actions, to improve coordination among agencies and levels of government, to provide for the wise use of Hawai'i's resources, and to guide the future development of the state (HDBEDT 1991).

The legislature adopted the Hawai'i State Planning Act, as Hawai'i Revised Statute Section 226-1. The act consists of a series of broad goals, objectives, and policies that guide future long-term growth and development. The planning act further provides a basis for determining priorities and allocating limited resources, seeks to improve coordination of federal, state, and county plans, policies, programs, projects, and regulatory activities, and establishes a system for plan formulation and program coordination to integrate all major state and county activities.

### ***State Functional Plans***

The Hawai'i State Planning Act called for the creation of functional plans to set specific objectives, to establish policies, and to implement actions for a particular field of activity. These functional plans further identified those organizations responsible for carrying out the actions, the implementing timeframe, and the proposed budgets. The most current functional plans that may be relevant to the proposed projects are discussed below.

- The State Agricultural Functional Plan (1991) identified issues vital to the economic growth and success of the agriculture industry. One of the governing policies of the functional plan for agriculture is to develop capabilities to convert Hawai'i-grown crops into potential new value added products for the local, visitor industry, and export markets. The plan encouraged the promotion of effective marketing for Hawai'i's agricultural commodities and the fostering of increased public awareness and understanding of the contribution and benefits of agriculture as a major sector of Hawai'i's economy.
- The State Recreation Functional Plan (1991) focused on six areas: ocean and shoreline recreation; Mauka, urban, and other recreation; public access to the shoreline and upland recreation areas; resource conservation and management; management and recreation programs, facilities; and wetlands protection and management. The plan included a technical reference document referred to as the State Comprehensive Outdoor Recreation Plan, which was updated in 1996.
- The State Conservation Lands Functional Plan (1991) primarily addressed governmental policies and programs directed at the preservation of conservation lands and the judicious use of the State's natural resources.

### ***State Land Use Districts***

The Land Use Law under Hawai'i Revised Statutes, Section 205, places all lands in one of four land use districts: Urban, Agriculture, Conservation, or Rural. The State Land Use Commission, an agency of the Department of Business, Economic, Development, and Tourism, administers the land use law and periodically updates the land use district maps. The Land Use Commission also reviews applicant-initiated amendments to the district boundaries, pursuant to Hawai'i Revised Statute Section 205-4 and the Hawai'i Administrative Rules, Chapter 15-15, Hawai'i Land Use Commission Rules, as amended.

### ***Hawai'i Administrative Rules Title 13 Department of Land and Natural Resources (DLNR)***

Under this Hawai'i Administrative Rule, DLNR is charged with regulating land use in the Conservation District for conserving, protecting, and preserving the important natural resources of the state through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare. Conservation District subzone designations are Protective, Limited, Resource, General, and Special.

***Hawai'i Coastal Zone Management Program***

Enacted as Chapter 205A, Hawai'i Revised Statute, the Hawai'i CZM Program was established in 1977 in response to the Federal Coastal Zone Management Act of 1972. The CZM Program encompasses the entire state, including all marine waters seaward to the extent of the state's police power and management authority, including the 12-mile US territorial sea.

**N.2.3 County Land Use Plans and Policies*****City and County of Honolulu General Plan Objectives and Policies***

The 1992 General Plan for the City and County of Honolulu is a statement of objectives and policies that set forth the long-range aspirations of O'ahu residents and strategies of action to achieve them. It is the focal point of a comprehensive planning process that addresses various issues affecting the City and County of Honolulu (City and County of Honolulu 1992).

***City and County of Honolulu Sustainable Communities Plans***

O'ahu is divided into eight geographic planning regions responding to specific conditions and community values of each region. Most of O'ahu's project areas are included in four of the sustainable community plans: Central O'ahu (City and County of Honolulu 2002a), North Shore (City and County of Honolulu 2000a), Wai'anae (City and County of Honolulu 2000b), and Ko'olau Loa (City and County of Honolulu 2002b). These planning regions are envisioned to remain relatively stable. The project area at Hickam AFB is included in the Primary Urban Center, which is composed of communities from Wai'alae-Kahala to Pearl City. It is the most populated part of the state, and is O'ahu's largest employment center.

***City and County of Honolulu Land Use Ordinance***

The purpose of the ordinance is to regulate land use in a manner that will encourage orderly development in accordance with adopted land use policies, including the O'ahu General Plan and Sustainable Community Plans, and to promote and protect the public health, safety, and welfare.

***County of Hawai'i General Plan***

The County of Hawai'i General Plan is a policy document for the long-range comprehensive development of the Big Island. It provides direction for the future growth of the county. It brings into focus the relationship between residents and their pursuits and institutions, offering policy statements that embody the expressed goals for present and future generations. As a policy document, the General Plan (County of Hawai'i 1989) provides the legal basis for subdivision, zoning, and related ordinances. It also provides the legal basis for initiating and authorizing all public improvements and projects.

The December 2001 draft of the County of Hawai'i General Plan is under review (County of Hawai'i 2001a).

### ***County of Hawai'i Zoning Code***

The zoning code implements the general plan and is the County of Hawai'i's primary land use control. It deals with existing conditions and shorter range needs. The zoning code sets out the various types of zoning districts and the allowable uses for each. Zoning maps, established by ordinance, set out the zoning for the island on a parcel-by-parcel basis.

### ***Special Management Area and Shoreline Setback***

The SMA and shoreline setback are designated for more intensive management. The SMA originally encompassed all lands extending not less than 100 yards inland from the shoreline. The shoreline is defined as the upper reaches of the wash of the waves at high tide during the season of the year in which the highest wash of the waves occurs (other than storm or seismic waves). The shoreline is usually evidenced by vegetation growth or by the upper limit of debris left by the wash of waves. In some areas, the SMAs currently extend several miles inland to cover areas in which coastal resources are likely to be directly affected by development activities. The shoreline setback is the area between the shoreline and the shoreline setback line. Currently, most shoreline setback lines are set at 40 feet from the shoreline, although in some places the shoreline setback boundaries extend farther inland.

Actions within the SMA, including construction of Dillingham Trail and PTA trail, may require a SMA Use Permit. On O'ahu, this permit would need to be approved by both the City and County of Honolulu Planning Commission and the Council. On the Island of Hawai'i, this permit would need to be approved by the County of Hawai'i Planning Commission.

## **N.3 VISUAL RESOURCES**

**Army Regulation 200-3 Natural Resources - Land, Forest and Wildlife Management** - provides for maintenance, protection, and improvement of aesthetic values by "protecting and improving the natural beauty of the landscape" and "improving the appearance of installations and facilities in accordance with an approved landscape master plan and through initiatives of the Army Community of Excellence and self-help programs," including the Installation Design Guide (IDG). The IDG provides specific guidelines and information to improve the aesthetics of the installation, including site planning for parking, signs, lighting, and utilities, lists of plants appropriate for planting at specific installation sites, and standards for the planting, maintenance, and protection of trees, shrubs, groundcovers, and turf. All new construction projects are to include provisions for landscaping and aesthetics with appropriate landscape design and funding authorization, including landscaping, buffer zones, screening, parks, and recreational areas, as appropriate.

## **N.4 AIRSPACE**

### **N.4.1 Airspace Regulations**

**The Federal Aviation Act of 1958**-gives the FAA sole responsibility for the safe and efficient management of all airspace within the continental United States, a responsibility



that must be executed in a manner that meets the needs of all airspace users, both civil and military. The FAA's policy on airspace is implemented by FAA Order 1000.1A and is stated in FAA Handbook 7400.2E, Procedures for Handling Airspace Matters.

**Part 5 of FAA Handbook 7400.2E** contains the policy, procedures, and criteria for the assignment, review, modification, and revocation of special use airspace. Special use airspace, including prohibited areas, restricted areas, military operations areas, alert areas, and controlled firing areas, is airspace of defined dimensions wherein activities must be confined because of their nature, or wherein limitation may be imposed upon aircraft operations that are not a part of those activities, or both (FAA 2001).

**DOD Policy On The Management Of Special Use Airspace**-is essentially an extension of FAA policy, with additional provisions for planning, coordinating, managing, and controlling those areas set aside for military use. Airspace policy issues or interservice problems that must be addressed at the DOD level are handled by the DOD Policy Board on Federal Aviation, a committee composed of senior representatives from each service. However, airspace action within the DOD is decentralized, with each service having its own central office to set policy and oversee airspace matters.

**Executive Order 10854**-extends the responsibility of the FAA to the overlying airspace of those areas of land or water outside the jurisdiction of the United States. Under this order, airspace actions must be consistent with the requirements of national defense, must not be in conflict with any international treaties or agreements made by the United States, nor be inconsistent with the successful conduct of the foreign relations of the United States. Accordingly, actions concerning airspace beyond US jurisdiction (12 miles [19 kilometers]) require coordination with the DOD and State Department, both of which have preemptive authority over the FAA (FAA 2001).

**Part 5 of FAA Handbook 7400.2E**-also contains the policy, procedures, and criteria for the assignment, review, modification, and revocation of special use airspace overlying water, namely, warning areas. A warning area is airspace of defined dimensions over international waters containing activity that may be hazardous to nonparticipating aircraft. Because international agreements do not provide for prohibition of flight in international airspace, no restriction of flight is imposed. The term "warning area" is synonymous with the International Civil Aviation Organization term "danger area" (FAA 2001).

**Army Regulation 95-2 Air Traffic Control, Airspace, Airfields, Flight Activities, and Navigational Aids**-covers Army air traffic control general provisions, certification of airfields, airspace, and special military operations requirements, terminal instrument procedures, terminal air navigation, approach facilities, and other matters.

## N.5 AIR QUALITY

### ***Clean Air Act, 42 USC 7401***

The original 1963 federal Clean Air Act limited federal involvement in air quality programs to research, education, and advisory functions, plus a mediation role for interstate disputes. The federal role was expanded in 1965 with Congressional authorization for uniform federal emission standards for motor vehicles. The 1970 amendments to the Clean Air Act established several regulatory programs, including the following:

- Adoption of emission standards for motor vehicles and other types of mobile sources;
- Adoption of emission standards for major new industrial facilities as new source performance standards;
- Adoption of national emission standards for hazardous air pollutants; and
- Preconstruction review of major new industrial facilities or major modifications to existing facilities as the new source review (NSR) program for nonattainment areas and the prevention of significant deterioration (PSD) program for attainment areas.

The 1977 amendments to the Clean Air Act revised and expanded some of the regulatory programs established by the 1970 amendments. The 1990 amendments to the Clean Air Act made further revisions to the established regulatory programs and added some new regulatory programs, as follows:

- Operating permits for major industrial facilities (Title V permits);
- Additional programs to regulate an extensive list of hazardous air pollutants;
- Emissions allocation programs to regulate sulfur emissions from electrical power generation facilities;
- Programs to reduce emissions of compounds that deplete stratospheric ozone levels; and
- Requirements for federal agencies to demonstrate that actions they undertake are consistent with federally mandated SIPs.

In general, states have assumed primary responsibility for enforcing most industrial source emission standards and industrial source review requirements; the USEPA exercises formal review and oversight. Most states have implemented the NSR, PSD, and Title V requirements as formalized air quality permit programs. Many states have air quality permit programs that extend to emission sources not covered by federal NSR or PSD requirements. State air quality permit requirements generally are integrated with federal NSR and PSD requirements, resulting in a consolidated permit program. Under most consolidated permit programs, basic state permit requirements apply to all sources that are not specifically exempted. Additional NSR and PSD program requirements

(including USEPA review of the permit) become applicable if sources exceed various size or emission thresholds.

### ***Primary Pollutants, Secondary Pollutants, and Pollutant Precursors***

Air pollutants are often characterized as being primary or secondary. Primary pollutants are those emitted directly into the atmosphere, such as carbon monoxide, sulfur dioxide, lead particulates, and hydrogen sulfide. Secondary pollutants are those formed through chemical reactions in the atmosphere, such as ozone, nitrogen dioxide, and sulfate particles; these chemical reactions usually involve primary pollutants, normal constituents of the atmosphere, and other secondary pollutants.

Those compounds that react to form secondary pollutants are referred to as reactive pollutants, pollutant precursors, or precursor emission products. Some air pollutants (such as many organic gases and suspended particulate matter) are a combination of primary and secondary pollutants.

The distinction between primary and secondary pollutants is more than a matter of semantics; important air quality management implications are also involved. The ambient concentration of primary pollutants depends on the spatial concentration of the emission sources, the rate of pollutant emissions, and the degree to which the emitted pollutants are dispersed or removed from the atmosphere between the emission source and the location of interest. Air quality problems involving primary pollutants (such as carbon monoxide) often can be traced to a single pollutant source or a concentrated group of sources emitting large quantities of the pollutant. Additionally, the responsible emission source will be relatively close to the location of the air quality problem. The distance between the emission source and the location of a ground-level air quality problem depends largely on the height at which the emissions are released into the atmosphere.

When an air quality problem involves a secondary pollutant (such as ozone), the spatial relationship between emission sources and ambient air quality problems becomes much more complicated. Because secondary pollutants are not emitted directly into the atmosphere, observed ambient concentrations may not show a clear correlation with the spatial distribution of sources emitting the pollutant precursors. The time factor involved in the chemical reactions producing secondary pollutants allows emissions from numerous sources to become dispersed and mixed together. As a result, the observed ambient pollutant concentrations are due as much to the cumulative area-wide emissions of precursors as to the spatial concentration of emission sources.

### ***Aerosols and Particulate Matter***

Most people would interpret aerosol to mean some type of liquid droplet or mist sprayed into the air. Similarly, most people would interpret particulate matter to mean a solid particle (such as dust or fly ash). But in the air pollution field, these terms are used interchangeably: both terms can refer to either liquid or solid material suspended in the air.

**Ozone Precursor Emissions**

Ozone is a major component of photochemical smog. The pollutant emissions generally categorized as ozone precursors fall into two broad groups of chemicals: nitrogen oxides and organic compounds. Many different terms are used to refer to these groups of ozone precursors, but the various terms are seldom used in a rigorous chemical sense.

Nitrogen oxides and oxides of nitrogen are used interchangeably to refer to the combination of nitric oxide (designated by the chemical symbol NO) and nitrogen dioxide (designated by the chemical symbol NO<sub>2</sub>). This combination of nitrogen oxides often is designated by the symbol NO<sub>x</sub>. Although there are five different oxides of nitrogen, NO<sub>x</sub> generally refers only to the combination of NO and NO<sub>2</sub>. NO<sub>2</sub> is itself a secondary pollutant formed primarily from nitric oxide.

Organic compound precursors of ozone are routinely described by a number of variations of three terms: hydrocarbons (HC), organic gases (OG), and organic compounds (OC). These terms are often modified by adjectives such as total, reactive, or volatile. The result is a rather confusing array of acronyms: HC, THC (total hydrocarbons), RHC (reactive hydrocarbons), TOG (total organic gases), ROG (reactive organic gases), TOC (total organic compounds), ROC (reactive organic compounds), and VOC (volatile organic compounds). An additional term, NMHC (nonmethane hydrocarbons), is also used on occasion.

To a chemist, most of these terms differ from each other in some significant way. However, in the air pollution control field they are categorized into two groups: non-photochemically reactive in the lower atmosphere (e.g. THC, TOG, TOC, methane or many chlorinated organics) or photochemically reactive in the lower atmosphere (e.g. HC, RHC, ROG, ROC, VOC, and NMHC).

From a purely chemical standpoint, the hydrocarbon terminology (HC, THC, RHC, and NMHC) often is inappropriate; many of the compounds of concern are organic compounds but not hydrocarbons. The reactive organic gases terminology incorrectly implies that compounds that condense into an aerosol droplet cease to play a role in smog photochemistry. The volatile organic compound terminology incorrectly implies that emissions occur only through an evaporation process. "Reactive organic compounds" usually is the most accurate ozone precursor terminology, but the ROC acronym is not in widespread use. Because there already are too many acronyms for ozone precursors, the ROG acronym is the most reasonable one to use and is the one used in this document.

**Air Quality Standards**

Air quality management programs have evolved using two distinct management approaches:

- Setting ambient air quality standards for acceptable exposure to air pollutants, conducting monitoring programs to identify locations

experiencing air quality problems, and then developing programs and regulations designed to reduce or eliminate those problems; and

- Identifying specific chemical substances that are potentially hazardous to human health and then setting emission standards to regulate the amount of those substances that can be released by individual commercial or industrial facilities or by specific types of equipment.

### ***Ambient Air Quality Standards for Criteria Pollutants***

Air quality programs based on ambient air quality standards typically address air pollutants that are produced in large quantities by widespread types of emission sources and which are of public health concern because of their toxic properties. The USEPA has established ambient air quality standards for several different pollutants, which often are referred to as criteria pollutants (ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, suspended particulate matter, and lead). Standards for suspended particulate matter have been set for two size fractions: Inhalable particulate matter (PM<sub>10</sub>) and fine particulate matter (PM<sub>2.5</sub>). Federal ambient air quality standards are based primarily on evidence of acute and chronic health effects and apply to outdoor locations to which the general public has access.

Some states have adopted ambient air quality standards that are more stringent than the comparable federal standards or address pollutants that are not covered by federal ambient air quality standards. Most state ambient air quality standards are based primarily on health effects data but can reflect other considerations such as protecting crops and materials or avoiding nuisance conditions, such as objectionable odors. Table N-1 summarizes federal and state ambient air quality standards applicable in Hawai'i.

Air pollutants covered by federal and state ambient air quality standards can be categorized by the nature of their toxic effects, as follows:

- Irritants (such as ozone, particulate matter, nitrogen dioxide, sulfur dioxide, and hydrogen sulfide) that affect the respiratory system, eyes, mucous membranes, or skin;
- Asphyxiants (such as carbon monoxide and nitric oxide) that displace oxygen or interfere with oxygen transfer in the circulatory system, affecting the cardiovascular and central nervous systems;
- Necrotic agents (such as ozone, nitrogen dioxide, and sulfur dioxide) that directly cause cell death; or
- Systemic poisons (such as lead particles) that affect a range of tissues, organs, and metabolic processes.

**Table N-1**  
**Ambient Air Quality Standards Applicable in Hawai'i**

Pollutant	Symbol	Averaging Time	Standard as Parts Per Million by Volume		Standard as Micrograms per Cubic Meter		Violation Criteria	
			Hawai'i	National	Hawai'i	National	Hawai'i	National
Ozone	O <sub>3</sub>	8 Hours	0.08	0.08	157	157	If exceeded on more than 1 day per year	If exceeded by the mean of annual 4th highest daily values for a 3-year period
Carbon Monoxide	CO	8 Hours	4.5	9	5,000	10,000	If exceeded on more than 1 day per year	If exceeded on more than 1 day per year
		1 Hour	9	35	10,000	40,000	If exceeded on more than 1 day per year	If exceeded on more than 1 day per year
Inhalable Particulate Matter	PM <sub>10</sub>	Annual Arithmetic Mean	---	---	50	50	If exceeded	If exceeded as a 3-year single station average
		24 Hours	---	---	150	150	If exceeded on more than 1 day per year	If exceeded by the mean of annual 99 <sup>th</sup> percentile values over 3 years

**Table N-1**  
**Ambient Air Quality Standards Applicable in Hawai'i (*continued*)**

Pollutant	Symbol	Averaging Time	Standard as Parts Per Million		Standard as Micrograms per Cubic Meter		Violation Criteria	
			by Volume					
			Hawai'i	National	Hawai'i	National	Hawai'i	National
Fine Particulate Matter	PM2.5	Annual Arithmetic Mean	---	---	---	15.0	---	If exceeded as a 3-year spatial average of data from designated stations
		24 Hours	---	---	---	65	---	If exceeded by the mean of annual 98 <sup>th</sup> percentile values over 3 years
Nitrogen Dioxide	NO2	Annual Average	0.037	0.053	70	100	If exceeded	If exceeded
Sulfur Dioxide	SO2	Annual Average	0.03	0.03	80	80	If exceeded	If exceeded
		24 Hours	0.14	0.14	365	365	If exceeded on more than 1 day per year	If exceeded on more than 1 day per year
		3 Hours	0.5	0.5	1,300	1,300	If exceeded on more than 1 day per year	If exceeded on more than 1 day per year

**Table N-1**  
**Ambient Air Quality Standards Applicable in Hawai'i (*continued*)**

Pollutant	Symbol	Averaging Time	Standard as Parts Per Million by Volume		Standard as Micrograms per Cubic Meter		Violation Criteria	
			Hawai'i	National	Hawai'i	National	Hawai'i	National
Lead Particles (TSP Sampler)	Pb	Calendar Quarter	---	---	1.5	1.5	If exceeded	If exceeded
Hydrogen Sulfide	H <sub>2</sub> S	1 Hour	0.025	---	35	---	If exceeded on more than 1 day per year	---

Sources: 40 CFR Parts 50, 53, and 58; Hawaii Administrative Rules Chapter 11-59 (August 28, 2001)

Notes:

All standards except the national PM<sub>10</sub> and PM<sub>2.5</sub> standards are based on measurements corrected to 25 degrees C and 1 atmosphere pressure.

The national PM<sub>10</sub> and PM<sub>2.5</sub> standards are based on direct flow volume data without correction to standard temperature and pressure.

Decimal places shown for standards reflect the rounding precision used for evaluating compliance.

Gaseous pollutant concentration equivalencies (parts per million by volume versus micrograms per cubic meter) are nominal values accounting for rounding conventions; exact equivalencies may be different.

Except for the 3-hour sulfur dioxide standard, the national standards shown are the primary (health effects) standards.

The national 3-hour sulfur dioxide standard is a secondary (welfare effects) standard.

The national PM<sub>10</sub> standards were adopted in 1987; revised violation criteria were adopted for attainment areas in 1997.

The original violation criteria for the national PM<sub>10</sub> standards will remain in effect for PM<sub>10</sub> nonattainment areas until EPA takes actions required by Section 172(e) of the Clean Air Act or approves emission control programs for the relevant PM<sub>10</sub> state implementation plan.

Violation criteria for all standards except the national annual standard for PM<sub>2.5</sub> are applied to data from individual monitoring sites.

Violation criteria for the national annual standard for PM<sub>2.5</sub> are applied to a spatial average of data from one or more community-oriented monitoring sites representative of exposures at neighborhood or larger spatial scales (40 CFR Part 58).

The "10" in PM<sub>10</sub> and the "2.5" in PM<sub>2.5</sub> are not particle size limits; these numbers identify the particle size class (aerodynamic equivalent diameters in microns) collected with 50% mass efficiency by certified sampling equipment. The maximum particle size collected by PM<sub>10</sub> samplers is about 50 microns aerodynamic equivalent diameter; the maximum particle size collected by PM<sub>2.5</sub> samplers is about 6 microns aerodynamic equivalent diameter. (40 CFR Part 53).

The "10" in PM<sub>10</sub> and the "2.5" in PM<sub>2.5</sub> are not particle size limits; these numbers identify the particle size class (aerodynamic equivalent diameters in microns) collected with 50% mass efficiency by certified sampling equipment. The maximum particle size collected by PM<sub>10</sub> samplers is about 50 microns aerodynamic equivalent diameter; the maximum particle size collected by PM<sub>2.5</sub> samplers is about 6 microns aerodynamic equivalent diameter. (40 CFR Part 53).



Ozone, suspended particulate matter, and carbon monoxide are the air pollutants of greatest concern in most parts of the country. Ozone is a strong oxidizing agent that reacts with a wide range of materials and biological tissues. It is a respiratory irritant that can cause acute and chronic effects on the respiratory system. Recognized effects include reduced pulmonary function, pulmonary inflammation, increased airway reactivity, aggravation of existing respiratory diseases (such as asthma, bronchitis, and emphysema), physical damage to lung tissue, decreased exercise performance, and increased susceptibility to respiratory infections. In addition, ozone is a necrotic agent that causes significant damage to leaf tissues of crops and natural vegetation. Ozone also damages many materials by acting as a chemical oxidizing agent. Because of its chemical activity, indoor ozone levels are usually much lower than outdoor levels.

Suspended particulate matter represents a diverse mixture of solid and liquid material having size, shape, and density characteristics that allow the material to remain suspended in the air for long periods. The physical and chemical composition of suspended particulate matter is highly variable, resulting in a wide range of public health concerns.

Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals.

Public health concerns for suspended particulate matter focus on the particle size ranges likely to reach the lower respiratory tract or the lungs.  $PM_{10}$  represents particle size categories that are likely to reach either the lower respiratory tract or the lungs after being inhaled.  $PM_{2.5}$  represents particle size categories likely to penetrate to the lungs after being inhaled. The 10 in  $PM_{10}$  and the 2.5 in  $PM_{2.5}$  are not upper size limits but refer to the particle size range collected with 50 percent mass efficiency by certified sampling devices; larger particles are collected with lower efficiencies, and smaller particles are collected with higher efficiencies.

In addition to public health impacts, suspended particulate matter causes a variety of material damage and nuisance effects: abrasion; corrosion, pitting, and other chemical reactions on material surfaces; soiling; and transportation hazards due to visibility impairment.

Carbon monoxide is a public health concern because it binds to the ferrous heme binding sites on hemoglobin 200 to 250 times more preferentially than oxygen. Therefore, a relatively low concentration of carbon monoxide can affect the amount of oxygen in the bloodstream available to be transported to the body tissues (Bromberg 1999, Gutierrez 1982, Maynard and Waller 1999, McGrath 1982, and USEPA 1990).

***Hazardous Air Pollutants***

Air quality programs based on regulation of other hazardous substances typically address chemicals used or produced by limited categories of industrial facilities. Programs regulating hazardous air pollutants focus on substances that alter or damage the genes and chromosomes in cells (mutagens), substances that affect cells in ways that can lead to uncontrolled cancerous cell growth (carcinogens), substances that can cause birth defects or other developmental abnormalities (teratogens), substances with serious acute toxicity effects, and substances that undergo radioactive decay processes, resulting in the release of ionizing radiation. Federal air quality management programs for hazardous air pollutants focus on setting emission limits for particular industrial processes, rather than on setting ambient exposure standards. Some states have established ambient exposure guidelines for various hazardous air pollutants and use those guidelines as part of the permit review process for industrial emission sources.

The State of Hawai'i has adopted ambient concentration guidelines for hazardous air pollutants which are used as part of the permit review process for emission sources that require state or federal air quality permits. The Hawai'i ambient exposure guidelines for hazardous air pollutants (Hawai'i Administrative Rules Title 11 Chapter 60.1, Section 179) include the following:

- For noncarcinogenic compounds, an 8-hour average concentration equal to one percent of the corresponding 8-hour threshold level value (TLV) adopted by OSHA;
- For noncarcinogenic compounds, an annual average concentration equal to 1/420 (0.238 percent) of the 8-hour TLV value adopted by OSHA;
- For noncarcinogenic compounds for which there is no OSHA-adopted TLV, the Director of Health is authorized to set ambient air concentration standards case-by-case to avoid unreasonably endangering public health with an adequate margin of safety; and
- For carcinogenic compounds, any ambient air concentration that produces an individual lifetime excess cancer risk of more than 10 in 1 million, assuming continuous exposure for 70 years.

**N.6 NOISE**

Other frequency weighting schemes are used for specialized purposes. The C-weighted decibel scale (dBC) often is used to characterize low frequency sounds capable of inducing vibrations in buildings or other structures. The C-weighted scale makes only minor reductions to the measured pressure level for low frequency components of a sound, while making slightly greater reductions to high frequency components than does the A-weighted scale.

Unweighted decibel measurements are used for refined analyses that require data on the frequency spectrum of a sound (e.g., when determining the sound absorption or sound transmission properties of materials). Unweighted decibel measurements sometimes are termed flat or linear measurements. The term overall sound pressure level sometimes is

used as a technical term to describe unweighted decibel measurements. Unfortunately, the phrase also is used in a generalized sense to refer to composite dBA or dBC measurements (combined measurements across the range of frequency bands being measured). For most noise sources, unweighted dB measurements are less than 1 dB higher than corresponding C-weighted dB measurements. Evaluations of blast noise or sonic booms sometimes use a peak overpressure measurement. The peak overpressure normally is an unweighted decibel measurement for the dominant octave band, or 1/3 octave band component of a sound. In most cases, the specific octave or 1/3 octave band for the peak overpressure measurement is not reported. The peak overpressure level is slightly less than the corresponding composite unweighted decibel measurement.

Varying noise levels often are described in terms of the equivalent constant decibel level. Equivalent noise levels (Leq) are not a simple averaging of decibel values but are based on the cumulative acoustical energy associated with the component decibel values. Leq values sometimes are referred to as energy-averaged noise levels. As a consequence of the calculation procedure, high dB events contribute more to the Leq value than do low dB events.

Leq values are used to develop single-value descriptions of average noise exposure over various periods of time. Such average noise exposure ratings often include additional weighting factors for potential annoyance due to time of day or other considerations. The Leq data used for these average noise exposure descriptors generally are based on A-weighted sound level measurements.

Statistical descriptions (L<sub>x</sub>, where x represents the percent of the time when noise levels exceed the specified decibel level) also are used to characterize noise conditions over specified periods. L<sub>1</sub>, L<sub>5</sub>, and L<sub>10</sub> descriptors can be used to characterize peak noise levels, while L<sub>90</sub>, L<sub>95</sub>, and L<sub>99</sub> descriptors can be used to characterize background noise levels. (Note that the L<sub>50</sub> value (the sound level exceeded 50 percent of the time) is seldom the same as the Leq value for the period being analyzed.) The Leq value often is between the L<sub>30</sub> and the L<sub>40</sub> values for the measurement period.

### ***Noise Descriptors for Discrete Noise Events***

Many people are skeptical about using 24-hour average noise descriptors to evaluate the annoyance potential of isolated short-duration noise events. Although this skepticism is often misplaced, other types of noise evaluations can be used. Lightly used rail lines, aircraft at small general aviation airports, emergency generators, pile drivers, and blasting activities sometimes are evaluated using other types of noise descriptors. Peak noise levels, the duration of individual noise events, and the repetition pattern of events often are used to describe intermittent or short duration noise conditions. Statistical descriptions (L<sub>x</sub> values) and event-specific Leq values also can be used to characterize discrete noise events.

Impulse sounds usually are defined as noise events producing a significant increase in sound level but lasting less than two seconds (often less than one second). Examples of impulse noise sources include pile driving, punch presses, gunshots, fireworks, sonic

booms, and blasting. Impulse noises usually are described using the sound exposure level (SEL) descriptor. In addition to impulse type noise events, the SEL descriptor often is used for a variety of longer duration discrete noise events (such as aircraft flyovers and train passings). The SEL measure represents the cumulative (not average) sound exposure during a particular noise event, integrated with respect to a one-second time frame. The SEL descriptor sometimes is labeled SENEL (single event noise exposure level), LAE, LAX, or LE.

SEL measurements are equivalent to the Leq value of a one-second noise event producing the same cumulative acoustic energy as the actual noise event being analyzed. In effect, an SEL measure spreads or compresses the noise to fit a fixed one-second time interval. If the actual duration of the noise is less than one second, the SEL value will be less than the Leq value. If the duration of the noise exceeds one second, the SEL value will exceed the Leq.

Impulse noises of substantial magnitude (e.g., blasting or sonic booms) often are characterized using unweighted (flat) or C-weighted SEL measures. Annoyance from such sources often involves induced structural vibrations and the loudness of the noise. Unweighted and C-weighted decibel scales have proven more useful than the A-weighted scale for such evaluations. Less intense impulse noises often are characterized using an A-weighted SEL measure.

Most SEL measurements are performed using procedures that restrict the time interval over which actual measurements or subsequent calculations are made. Sometimes this involves defining the noise as the period when sound levels exceed a particular threshold level. In other cases, the calculations are restricted to that duration of the noise when sound levels are within a defined increment (generally 10 to 30 dB) of the peak sound level. The measurement restrictions noted above are done as a practical expediency to minimize manual computations, to accommodate monitoring instruments with a limited measurement range, or to systematically define discrete noise events against fluctuating background noise conditions. Due to the logarithmic nature of decibel units, these measurement restrictions normally have little effect on the calculated SEL value.

If individual noise events are repeated frequently, it is possible to calculate Ldn or CNEL values based on typical SEL values and the number of occurrence of such noise events during daytime, evening, and nighttime periods. Such computation procedures often are used to estimate noise levels around airports or railway lines.

A slightly modified version of the Ldn and CNEL calculations is used in some computer models that evaluate aircraft noise along low altitude military training routes. An additional penalty factor of up to 11 dB is added to the standard Ldn or CNEL calculation to account for the added disturbance caused by very rapid increases in noise level during flyover events. The resulting “onset rate adjusted” Ldn or CNEL value is often designated as Ldnmr. The magnitude of the added penalty factor depends on flight speed, flight altitude, and aircraft type. The maximum penalty factor (11 dB) is

added for conditions in which noise levels increase from background conditions to the peak level in less than one second.

### ***Decibel Values***

The nature of dB scales is such that numerical dB ratings for different noise sources cannot be added directly to give the dB rating of the combination of these sources. Decibel values are 10 times the logarithm of a squared pressure ratio, and must be converted back into squared pressure ratio values before being added together or averaged in a time-weighted manner. The resulting composite squared pressure ratio value can then be converted back into a composite decibel rating. For simplicity, the procedure for combining decibel values is often referred to as “energy averaging”.

### ***Time-Weighted Averages***

The calculation procedure used for computing average noise levels (Leq values) results in high dB events contributing significantly more to the final Leq value than do background low dB conditions. For example, a single 1-second episode of 90 dBA introduced into a 1-hour constant background noise condition of 45 dBA will result in a 1-hour Leq value of 54.9 dBA. A 5-second episode of 90 dBA in a 1-hour background condition of 45 dBA results in a 1-hour Leq of 61.5 dBA. And a cumulative total of 20 seconds of 90 dBA in a 1-hour background condition of 45 dBA results in a 1-hour Leq of 67.5 dBA.

### ***Cumulative Effect of Multiple Noise Sources***

Two noise sources producing equal dB ratings at a given location will produce a composite noise level 3 dB greater than either sound alone. When two noise sources differ by 10 dB, the composite noise level will be only 0.4 dB greater than the louder source alone. Most people have difficulty distinguishing the louder of two noise sources that differ by less than 1.5-2 dB.

### ***Decibel Changes Versus Perceived Loudness***

In general, a 10 dB increase in noise level is perceived as a doubling (100% increase) in loudness. A 2 dB increase represents a 15 percent increase in loudness, a 3 dB increase is a 23 percent increase in loudness, and a 5 dB increase is a 41 percent increase in loudness. Conversely, a 2 dB reduction represents a 13% decrease in loudness, a 3 dB reduction represents a 19% decrease in loudness, a 5 dB reduction represents a 29% decrease in loudness, and a 10 dB reduction represents a 50% decrease in loudness.

### ***Sound Attenuation Considerations***

When distance is the only factor considered, sound levels from an isolated noise source would be expected to decrease by about 6 dB for every doubling of distance away from the noise source. When the noise source is essentially a continuous line (e.g., vehicle traffic on a highway), noise levels would be expected to decrease by about 3 dB for every doubling of distance, due to the additive effects of a linear array of noise sources.

Sound levels at various locations away from a noise source are influenced by factors other than just distance from the noise source. Ground surface conditions, topographic

features, and structural barriers can absorb, reflect, or scatter sound waves, resulting in lower noise levels (increased sound attenuation rates). Atmospheric conditions (wind speed and direction, humidity levels, temperature, and air pressure) and the frequency characteristics of the sound itself also affect sound attenuation rates. The vertical variation in wind, temperature, pressure, and humidity conditions also affects sound attenuation rates.

The atmosphere absorbs some of the energy content of sound waves, thus increasing sound attenuation rates over long distances. Such atmospheric absorption is greatest for high frequency components of a sound, resulting in a lower pitch to the sound at greater distances. Atmospheric absorption is most strongly dependent on temperature and humidity conditions, with a somewhat complex relationship among temperature, humidity, and the frequency components of the sound. Overall, atmospheric absorption is greatest for high frequency sounds under conditions of low relative humidity and moderately cool temperatures. Atmospheric absorption is least for low frequency sounds at high relative humidity and moderate temperatures.

Sound waves reflected by topographic features, buildings, or other structures can result in higher sound levels than expected in front of the reflecting object. The effects of reflected sound waves can be important in urban areas, partially off-setting the shielding effect of buildings and other structures.

Temperature inversions and altitudinal changes in wind conditions can at times diffract and “focus” sound waves to a location at considerable distance from the noise source. In such situations, the vertical changes in atmospheric conditions affect sound waves much the way lenses and prisms can bend and focus light rays.

### ***Decibel Scales Reflecting Annoyance Potential***

Average noise exposure over a 24-hour period often is presented as a day-night average sound level (Ldn). Ldn values are calculated from hourly Leq values, with the Leq values for nighttime (10 PM to 7 AM) increased by 10 dB to reflect the greater disturbance potential from nighttime noises. Because of the time period weighting, an Ldn value will be 6.4 dB greater than the corresponding 24-hour Leq value for a constant noise level. For most real noise conditions, the corresponding Ldn and 24-hour Leq values will differ by less than this.

The community noise equivalent level (CNEL) also is used to characterize average noise levels over a 24-hour period, with weighting factors for evening and nighttime noise levels. Leq values for the evening period (7 PM to 10 AM) are increased by 5 dB, while Leq values for the nighttime period are increased by 10 dB. Because of the time period weighting, a CNEL value will be 6.7 dB higher than the corresponding 24-hour Leq value for a constant noise level. For most real noise conditions, the corresponding CNEL and 24-hour Leq values will differ by less than this.

The CNEL value will be slightly higher than (but generally within 1 dB of) the Ldn value for the same set of noise measurements. Only in situations with high evening

period noise levels will CNEL values be meaningfully different from Ldn values. Because of the small difference between them, CNEL and Ldn ratings normally are considered interchangeable.

Single-value average noise descriptors (such as Ldn or CNEL values) are applied to variable but relatively frequent sources of noise. Typical urban noise conditions, highway traffic, major rail yards, heavily used rail lines, and major commercial airports are examples where CNEL and Ldn descriptors are most appropriate.

### ***Federal Legislation***

#### *The Noise Pollution and Abatement Act of 1970*

This act (Title IV of the Clean Air Act, 42 USC 7627) established an Office of Noise Abatement and Control within the US Environmental Protection Agency (EPA). The USEPA was directed to investigate and identify the effects of noise levels on public health and welfare, including: psychological and physiological effects on humans; effects of sporadic extreme noise as compared with constant noise; effects on wildlife and property; effects of sonic booms on property; and such other matters as may be of interest in the public welfare. Title IV of the Clean Air Act also requires other federal agencies and departments to consult with USEPA regarding methods for abating objectionable or nuisance condition noise impacts that result from activities they carry out or sponsor.

#### *Federal Noise Control Act of 1972 (42 USC 4901 et seq.)*

This act established a requirement that all federal agencies must administer their programs in a manner that promotes an environment free from noise that jeopardized public health or welfare. USEPA was given the responsibility for: providing information to the public regarding identifiable effects of noise on public health or welfare, publishing information on the levels of environmental noise that will protect the public health and welfare with an adequate margin of safety, coordinating federal research and activities related to noise control, and establishing federal noise emission standards for selected products distributed in interstate commerce (construction equipment; transportation equipment; motors and engines; and electrical or electronic equipment). Aircraft, aircraft engines, military weapons, military combat equipment, rockets and other equipment used by the National Aeronautics and Space Administration, and various other items were excluded from the definition of products distributed in commerce. States and political subdivisions thereof retain the right to establish and enforce controls on environmental noise through the licensing, regulation, or restriction of the use, operation, or movement of products or combinations of products. The federal Noise Control Act also directed all federal agencies to comply with federal, state, interstate, and local noise control and abatement requirements to the same extent that any person is subject to such requirements.

Although the USEPA can require other federal agencies to justify their noise regulations with respect to the policy requirements of the federal Noise Control Act, each federal

agency retains authority to adopt noise regulations pertaining to agency programs. The Occupational Safety and Health Administration has primary authority for setting workplace noise exposure standards. Due to aviation safety considerations, the Federal Aviation Administration has primary jurisdiction over aircraft noise standards.

### ***Federal Interagency Noise Committees***

The Federal Interagency Committee on Urban Noise (FICUN) was formed in 1979 to review various federal agency programs related to noise impacts on land use. The committee included representatives of the Department of Transportation, Department of Housing and Urban Development, Environmental Protection Agency, Department of Defense, and the Veterans Administration. The 1980 report issued by FICUN summarized federal agency noise policies and programs. In addition, it identified the Ldn noise metric as the most appropriate noise descriptor to use for evaluating noise in the context of land use compatibility issues. The 1980 FICUN report also included a chart of compatible and incompatible noise levels for various categories of land use.

The Federal Interagency Committee on Noise (FICON) was formed in 1990 to review federal agency policies concerning the assessment of airport noise issues. Participating agencies included the Department of Transportation, Department of Defense, Department of Justice, Department of Housing and Urban Development, Environmental Protection Agency, Veterans Administration, and the Council on Environmental Quality. The 1992 report prepared by the committee confirmed the use of the Ldn noise metric as the primary basis for assessing land use compatibility issues, but also recognized that supplementary noise descriptors could be useful to further explain noise impacts on a case-by-case basis. The 1992 FICON report recognized the maximum A-weighted decibel level (Lmax) as useful for evaluating short-term individual aircraft flyover events.

The Federal Interagency Committee on Aviation Noise (FICAN) was established in 1993 to provide an on-going forum for coordination and review of federal agency activities related to aviation noise issues. Agency participation in FICAN includes the Federal Aviation Administration, the Department of Transportation (Office of the Secretary), US Army, US Navy, US Air Force, National Aeronautics and Space Administration, National Park Service, Department of Housing and Urban Development, Environmental Protection Agency, and the Centers for Disease Control and Prevention (National Center for Environmental Health). Periodic reviews conducted by FICAN have continued to support the use of Ldn values as the primary indicator of land use compatibility conditions in terms of aviation noise. FICAN has, however, also supported the use of supplemental noise descriptors (such as Lmax, SEL, or time above a threshold level) to provide information that is not easily communicated by Ldn values (FICAN 2002).



## N.7 HYDROLOGY AND GROUNDWATER

### N.7.1 Federal Laws and Regulations

#### ***Clean Water Act***

The federal legislation governing the water quality aspects of the project is the Clean Water Act (CWA), as amended by the Water Quality Act of 1987. The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

Congress delegated the permitting of fill material under Section 404 of the CWA to the Department of the Army. The Secretary of the Army has further delegated implementation of the permit program to the Army Corps of Engineers. The purpose of the Section 404 program is to insure that the physical, biological, and chemical quality of our nation’s water is protected from unauthorized discharges of dredged or fill material that would alter or destroy its quality, including its resource functions and values. Persons who proposed to place dredged or fill material in waters of the U.S. must first apply for and obtain a permit from the Corps, subject to a public interest review of the proposed activity. Some examples of activities that require Section 404 permits to place dredged or fill material into waters of the US (jurisdictional waters) include:

- Residential, commercial, recreational or other construction activities;
- Water dependent activities such as the construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs; and
- Road fills and placement of riprap for bank and other stabilization purposes.

Waters of the United States are surface waters including all traditional navigable waters, all interstate waters, all tributaries, impoundments, and adjacent wetlands of these waters, and the territorial seas. Also, agencies shall provide opportunity for early public review of proposals for construction in wetlands, including those projects not requiring an EIS.

#### ***Executive Order 11988 of 1977 (Flood Plain Management)***

Executive Order 11988 directs all Federal agencies to avoid, if possible, development and other activities in the 100-year base floodplain. Where the base floodplain cannot be avoided, special considerations and studies for new facilities and structures are needed. Design and siting are to be based on scientific, engineering, and architectural studies; consideration of human life, natural processes, and cultural resources; and the planned lifespan of the project. The implementing guidelines are in 40 CFR 6030.

Federal agencies are required to:

- Reduce the risk of flood loss;

- Minimize the impact of floods on human safety, health, and welfare; and
- Restore and preserve the natural and beneficial values served by floodplains in carrying out agency responsibility.

***Executive Order 11990 of 1977 (Wetlands)***

This order directs all Federal agencies to avoid, if possible, adverse impacts to wetlands and to preserve and enhance the natural and beneficial values of wetlands. Each agency shall avoid undertaking or assisting in construction projects in wetlands unless the head of the agency determines that there is no practicable alternative to such construction and that the proposed action includes measures to minimize harm.

In general, all waters must be free of substances resulting from domestic, industrial, or other controllable sources of pollution. This includes sediments resulting from erosion caused by construction or agricultural activities, floating or settleable materials, thermal pollutants, pathogens, biocides, excessive nutrients, toxic compounds, and other pollutants. All discharges to state waters are subject to laboratory testing to determine if the discharge meets standards for acute or chronic toxicity. These standards differ depending on whether the receiving water is classified as freshwater (salinity less than 0.5 parts per thousand [ppt]) or saltwater (salinity greater than 0.5 ppt). Two types of tests are used, including tests to determine if concentrations of individual pollutant chemicals are present above threshold concentrations; and tests that measure the survival of indicator organisms in samples of the water under specific test conditions. These standards are published in HAR Title 11, Chapter 54.

**N.7.2 State of Hawai'i Laws, Regulations, and Policies**

In Hawai'i, several agencies have responsibility for managing water resources. Management of land-based surface and groundwater supplies (quantity) is the responsibility of the State Water Commission. The Coastal Commission is charged with protecting waters within the Coastal Zone. The State Department of Health is responsible for protecting surface and groundwater quality. Each county prepares a County Water Use and Development Plan.

***State Water Code***

In 1987 the Hawai'i State Legislature enacted the State Water Code, which is Chapter 174C of the Hawai'i Revised Statutes. The code established the State Commission on Water Resource Management (Water Commission). The division's primary responsibilities are:

- Basic Data Collection and Resource Assessment;
- Water Resource Planning;
- Regulation of Water Development and Use;
- Enforcement and Technical Support Services; and
- Protection of Instream Uses.

The Code also called for the preparation of a Hawai'i Water Plan. The Plan consists of eight parts, including:

- Water Resources Protection Plan;
- Water Quality Plan;
- State Water Projects Plan;
- Agricultural Water Use and Development Plan; and
- Four County Water Use and Development Plans, for Hawai'i, Maui, Honolulu, and Kaua'i Counties.

Under the State Water Code, the Water Commission must establish and administer a state-wide in-stream use protection program. The commission must establish in-stream flow standards on a stream-by-stream basis "whenever necessary to protect the public interest." To preserve a stream environment in a perennial stream, some level of minimum flow is necessary. In establishing the minimum, flow characteristics need to be identified. As a general rule, in-stream values are significant only for perennial streams (Yuen and Associates 1990). (Perennial streams are streams that contain flowing water at all times during the year).

### ***Surface Water Protection and Water Quality Standards***

In 1989, environmental management programs of the Department of Health were organized under the Environmental Management Division, with media-specific branches, including the Clean Air Branch, the Clean Water Branch, the Safe Drinking Water Branch, the Solid and Hazardous Waste Branch, and the Wastewater Branch. The Environmental Planning Office revises the state Water Quality Standards every three years, as required by the federal Clean Water Act. The regulations governing water quality are primarily contained in Title 11, Chapter 54 of the Hawai'i Administrative Rules (HAR Chapter 11-54). The Clean Water Branch administers and enforces state water pollution laws and regulations.

As part of its three-year review process, the state recently reviewed HAR Chapters 11-54 and 11-55, and proposed many revisions needed to comply with federal and state law. The revisions are currently undergoing public review and comment, and the final rules must be approved by the USEPA. Only the current rules, rather than the proposed rules, are addressed in this report.

All waters are subject to an antidegradation policy, which states that "Waters whose quality are higher than established water quality standards shall not be lowered in quality unless it has been affirmatively demonstrated to the director [of the Department of Health] that the change is justifiable as a result of important economic or social development and will not interfere with or become injurious to any assigned uses made of, or presently in, those waters." (HAR Section 11-54-01.1)

In general, all waters must be free substances resulting from domestic, industrial, or other controllable sources of pollution. This includes sediments resulting from erosion caused by construction or agricultural activities, floating or settleable materials, thermal pollutants, pathogens, biocides, excessive nutrients, toxic compounds, and other pollutants. All discharges to state waters are subject to laboratory testing to determine if the discharge meets standards for acute or chronic toxicity. These standards differ depending on whether the receiving water is classified as freshwater (salinity less than 0.5 parts per thousand [ppt]) or saltwater (salinity greater than 0.5 ppt). Two types of tests are used, including tests to determine if concentrations of individual pollutant chemicals are present above threshold concentrations; and tests that measure the survival of indicator organisms in samples of the water under specific test conditions. These standards are published in HAR Title 11, Chapter 54.

### ***Surface Water Classification***

In addition to these general standards, additional water quality criteria have been established based on protection of water uses. The Hawaiian water use classification system is based on land use. All state waters are classified as either inland waters or marine waters. Inland waters may be fresh, brackish, or saline. Fresh waters have salinity of less than 0.5 parts per thousand (ppt). Brackish waters have salinity of greater than 0.5 ppt and less than 32 ppt. Saline waters have salinity greater than 32 ppt. Inland fresh water are further subdivided based on whether they are flowing (in streams, springs or seeps, or ditches and flumes), standing (including natural lakes and reservoirs), or wetlands (including elevated wetlands or low wetlands). Inland brackish and saline waters are further subdivided based on whether they are standing, wetlands, or estuaries.

### ***Inland Waters***

Inland waters are classified as Class 1a, Class 1b, or Class 2. The objective of Class 1 waters is to minimize human-caused pollution, and to protect the wilderness character of the waters. Waste discharge into Class 1 waters is prohibited, as is any action that results in a demonstrable increase in levels of contamination. Class 1a waters receive the highest level of protection. Class 1b waters are protected as a drinking water source. Class 2 waters are protected for recreational uses, aquatic life, agricultural and industrial water supplies, and shipping and navigation. Industrial, stormwater, or sanitary wastewater may be discharged to Class 2 waters provided the discharge is treated using the best degree of treatment or control compatible with the criteria established for Class 2 waters, and subject to NPDES point or non-point discharge permit requirements. No new treated sewage discharges are permitted within estuaries. No new industrial discharges to estuaries are permitted, except non-contact thermal and drydock discharges or marine railway discharges to Pearl Harbor.

For most inland waters, except streams, elevated wetlands, and estuaries, only the basic water quality standards apply, and waste discharge into these waters is prohibited. For streams, there are also numerical standards for nutrients (nitrogen and phosphorous), suspended solids, turbidity, pH, dissolved oxygen, temperature, and specific conductance, and there are specific standards for bottom sediments. For elevated

wetlands, in addition to the basic water quality standards, there is a pH standard. For estuaries other than the Pearl Harbor Estuary, standards are established for nutrients (nitrogen and phosphorous), ammonia, chlorophyll a, turbidity, pH, dissolved oxygen, temperature, and salinity in the water column, and for oxidation-reduction potential in bottom sediments. The standards for Pearl Harbor Estuary apply to the same parameters, but the allowable limits are higher than for other estuaries.

### *Marine Waters*

Marine waters include embayments, open coastal waters, and oceanic waters. Marine waters are classified as either Class AA or Class A. Class AA waters include specific protected bays or segments of coast, and all embayments in preserves, reserves, sanctuaries, and refuges, or embayments that have been identified as unique or critical habitat for threatened or endangered species. The objective of Class AA waters is that they remain as nearly as possible in their natural pristine state. Mixing zones of wastewater discharges are not allowed within reef areas where the depth is less than 18 meters (59.06 feet), or within 305 meters (1,000 feet) from shore if there is no reef.

Class A marine waters include all marine waters that are not classified as Class AA. The objective of Class A marine waters is to protect recreational and aesthetic uses. As for Class 2 inland waters, only discharges that have received the best degree of treatment or control compatible with the criteria for the waters are allowed. No new industrial discharges are allowed within Class A embayments except for industrial stormwater discharges that meet applicable water quality standards, NPDES-permitted point source discharges, and non-contact thermal and drydock or marine railway discharges to specific water bodies.

Numerical standards established for embayments include standards for nutrients (nitrogen and phosphorous), ammonia, chlorophyll a, turbidity, pH, dissolved oxygen, temperature, and salinity. The standards differ depending on the amount of freshwater inflow. “Wet” criteria apply when freshwater inflow is greater than one percent of the embayment volume per day, and lower “dry” criteria apply at other times.

Standards established for coastal waters and ocean waters address the same parameters as for embayments, except that the standards for coastal waters are more stringent than for embayments, and the standards for ocean waters are more stringent than for coastal waters. Only one area-specific criterion has been established, and that is for the Kona (west) coast of the island of Hawai‘i, excluding some areas such as Kawaihae Harbor.

Finally, two classes of marine bottom ecosystems are provided protective standards. These include water areas associated with these ecosystems. The objective of Class I marine bottom ecosystems is to maintain them as nearly as possible in their natural pristine state with an absolute minimum of pollution from human-induced sources. The objective of Class II marine bottom ecosystems is to protect propagation of fish, shellfish, and wildlife, and recreational uses. For the most part, the standards for marine bottom ecosystems address either sediment deposition or oxidation-reduction potential in the shallow sediment, although the Department of Health may designate other

parameters or measures on a site-specific basis. Any action that may permanently alter a Class II marine bottom ecosystem must be approved by the director of the Department of Health.

In addition to the above standards, specific criteria are established for recreational areas. These standards set limits on the quantities of pathogens, such as fecal coliform bacteria allowed in the waters, and prohibit discharge of raw or inadequately treated sewage.

### ***Point Source Discharge Requirements***

In November of 1974, the USEPA delegated the administration of the National Pollutant Discharge Elimination System (NPDES) Permit program in Hawai'i to the Hawai'i Department of Health. The NPDES program is the national program for controlling both point and non-point source discharges of pollutants to waters of the State and waters of the United States through uniform permitting procedures. For point sources, the permits establish limits on the concentrations and quantities of waste that can be discharged to waters of the state at an outfall, and monitoring requirements to ensure that the limits are not exceeded. Limits are typically based on evaluation of the degree of dispersion of the effluent within a mixing zone, and the permit establishes the allowable size of the mixing zone.

In November of 1990, Hawai'i's Nonpoint Source Water Pollution Management Plan and Hawai'i's Assessment of Nonpoint Source Pollution Water Quality Problems were completed, and in 1993, a Nonpoint Source Pollution Program was established in the Department of Health.

### ***Impaired Water Bodies***

In 1998, in compliance with requirements of Section 303 of the Clean Water Act that require biennial reports identifying impaired water bodies, the State of Hawai'i Department of Health identified 18 impaired water bodies statewide, (Impaired water bodies, or "Water Quality Limited Segments," are defined in Section 303 of the Clean Water Act as water areas where existing water quality does not meet, and will not meet, applicable water quality standards even after effluent limitation requirements on point source discharges are applied. Thus, impaired water bodies are defined in relation to dispersed, or non-point sources of pollution, rather than point sources.)

Of the impaired water bodies identified by the state, only Pearl Harbor and Kaiaka-Waialua Bay on O'ahu, and Hilo Bay on the island of Hawai'i, are downstream of SBCT project areas. Hickam AFB is adjacent to Pearl Harbor; Schofield Barracks lies partly within the upper watersheds of Pearl Harbor; Drum Road-Helemao Trail is in the upper watershed of Kaiaka-Waialua Bay; and the eastern side of Pōhakuloa Training Area is in the upper watershed of Hilo Bay. Pearl Harbor is impaired by nutrients, siltation, turbidity, and organic chemicals; Kaiaka-Waialua Bays are impaired due to turbidity; and Hilo Bay is also impaired because of turbidity.

In 2001, USEPA re-evaluated the 1998 list of impaired waterbodies to identify impaired perennial streams contributing runoff to the impaired waterbodies. Of 57 perennial

streams on O‘ahu, 31 were identified as impaired; and of 108 perennial streams on the island of Hawai‘i, eight were identified as impaired. Under the Clean Water Act, the state must determine current pollutant loads and establish load reductions necessary to bring the impaired water bodies into attainment. The resulting maximum allowable pollutant loadings are known as Total Maximum Daily Loads (TMDLs). The state has not yet determined TMDLs for any of the streams in watersheds containing SBCT project actions.

### ***Watershed Classification***

In response to the federal Clean Water Action Plan developed in 1998, the State of Hawai‘i assigned priorities for restoration of watersheds. The resulting classification scheme identified four categories of watersheds. Category I watersheds are those in need of restoration because they do not meet, or are close to not meeting, clean water and other natural resource goals. Category II watersheds are those that require preventive action to sustain water quality. Category III watersheds have pristine or sensitive aquatic systems on lands administered by federal, state, or tribal governments. Category IV watersheds are those with insufficient data to make an assessment. To date, the State has only identified Category I watersheds, relying mainly on the 303(d) list of impaired water bodies as the basis for classification.

On the Island of O‘ahu, all of the watersheds in the Ko‘olaupoko District, on the windward side of the island, were identified as “tier 1” Category I watersheds. The remaining watersheds containing or drained by 303(d) impaired water bodies were identified as “tier 2” watersheds.

On the leeward coast of the Big Island, the watershed of Pelekane Bay, which comprises intermittent streams draining the west side of the Kohala Mountains, was identified as a Category 1 watershed based on sediment erosion problems, partly due to grazing, that had a potential to impact coral reefs in the bay. It was given a high priority (“tier 1”) rating because its restoration was considered to have a high probability of success. Seven additional (“tier 2”) Category I watersheds were identified based on containing, or draining into, a 303(d) listed impaired water body. All of these watersheds are on the windward side of the island and drain to Hilo Bay. The upper portion of one of the seven listed watersheds - the upper Wailuku watershed - overlies the eastern side of the PTA.

### ***Watershed Protection Act***

In 2000, the state legislature passed Act 152, which created a watershed protection board. The Board included representatives of the Department of Land and Natural Resources, Department of Agriculture, water managers from each of the four counties, and a representative of the U.S. military. The Board was charged with development of a watershed master plan. Act 152 sunset on June 30, 2002, at which time the Board was to have prepared the watershed master plan. The Board did not complete the watershed master plan, but instead recommended that the plan be completed in four phases. Phase I is preparation of the framework for the Watershed Protection Program. Phase 2 is watershed assessment and prioritization in mauka (mountain, or upper watershed)

areas. Phase 3 is preparation of a Watershed Master Plan for mauka areas. Phase 4 is preparation of a Watershed Master Plan for mauka and makai (coastal, or lower watershed) areas, based on an ahupua'a approach to watershed management. The legislature has not acted to continue the existing Board or appoint a new Board, or to implement the recommendations of the previous Board.

### ***Coastal Zone Management Program***

The Hawai'i Coastal Zone Management Program (HCZMP) was promulgated in 1977 in response to the Federal Coastal Zone Management Act of 1972. The federal law was reauthorized and amended in 1990 in the Coastal Zone Act Reauthorizatoion Amendments (CZARA). The CZM area encompasses the entire state including all marine waters seaward to the extent of the state's police power and management authority, including the 12-mile (4-meter) US territorial sea and all archipelagic waters. The Program includes a permit system to control development within a SMA managed by the Counties and the Office of Planning; a Shoreline Setback Area which serves as a buffer against coastal hazards and erosion, and protects view-planes; and the Marine and Coastal Affairs. The national CZMA requires direct federal activities and development projects to be consistent with approved state coastal programs to the maximum extent practicable. One objective of the HCZMP is to reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.

The SMA originally encompassed all lands extending not less than 100 yards (91 meters) inland from the shoreline. The shoreline is defined as the upper reaches of the wash of the waves (other than storm or seismic waves) at high tide during the season of the year in which the highest wash of the waves occurs. The shoreline is usually evidenced by vegetation growth, or the upper limit of debris left by the wash of waves. Counties may amend the boundaries of the SMAs to achieve the CZM objectives and policies. No development can occur in the SMA unless the appropriate county (or for developments in the Community Development Districts, the Office of Planning) first issues a permit.

The Shoreline Setback Area is the area between the shoreline and the shoreline setback line. Currently, most shoreline setback lines are set at 40 feet (37 meters) from the shoreline, although in some places the Shoreline Setback boundaries extend further inland. The Counties have the authority to set deeper setbacks. Structures or portions of a structure are not permitted in the shoreline setback area without a variance.

In 1991, the Hawai'i and Marine Resources Council developed the Hawai'i Ocean Resources Management Plan (ORMP) that contains objectives, policies, implementing actions, and recommendations for a comprehensive, integrated ocean policy and management framework. The 1995 enactment of Act 104, Session Laws of Hawai'i integrated the ORMP with the Hawai'i CZM Program to strengthen the state's ability to coordinate marine and coastal policy development and resources management responsibilities. Act 104 also created the Marine and Coastal Zone Management Advisory Group (MACZMAG) which is charged with, among other things, facilitating the implementation of the ORMP. The boundaries addressed by ORMP are from the



coastal zone out to the limit of the 200-mile (183-meter) Exclusive Economic Zone (EEZ).

In compliance with the federal CZARA of 1990, the State of Hawai'i prepared the Hawai'i Coastal Nonpoint Pollution Control Program in 1996, which was approved by NOAA and USEPA in the same year. In July 2000, the state completed an Implementation Plan for Polluted Runoff Control, which establishes long and short-term goals and activities to control nonpoint source pollution as required for the implementation of the Coastal Nonpoint Pollution Control Program. It also establishes 5-year implementation plans to address polluted runoff in six categories: agriculture, forestry, urban, marinas and recreational boating, hydromodification, and wetlands and riparian areas. The non-point source pollution control programs are intended to be consistent with the Native Hawaiian 'ahupua'a approach to resource management.

### ***Traditional Ahupua'a Watershed Management Structure***

Water was an important factor in the organization and administration of communities in pre-territorial Hawai'i. The ahupua'a was the basic community land unit in old Hawai'i. An ahupua'a was a parcel of land generally conforming to the valley of a natural watershed and the associated coastal plain. It typically extended from the highest point at the head of the watershed to the outer edge of the reef offshore. The boundaries were marked by a heap ('ahu) of stones surmounted by an image of a pig (pua'a). The ahupua'a was entrusted by the king to a chief (ali'i), who administered it as a self-sufficient community. The development, distribution, and care of water were administered by a water master (konohiki). The ahupua'a was not only a land unit but was also a social, economic, and political unit, and by incorporating the watershed and nearshore fishing waters, it provided most of the resources needed by the community.

In 1848, King Kamehameha III adopted a new system of individual land ownership and subdivided the land in what became known as the Great Mehele (land division). At first, the land was divided among the crown, the government, the ali'i, and the konohiki. Then the Kuleana Act of 1850 enabled commoners to own land and also allowed the government to sell land to foreigners. Over time, thousands of acres were sold or given to foreigners. In 1893 the monarchy was overthrown and the remaining crown lands were confiscated by the government and made part of the public domain.

Ahupua'a have political, legal, cultural, and hydrologic significance. Current Hawaiian water law recognizes Konohiki rights to particular amounts of water assigned to specific land parcels for taro irrigation (Yamauchi and Hudes 1976). The islands are divided into political districts that comprise groups of ahupua'a. The names, and in some cases, the boundaries of ahupua'a are shown on current USGS topographic maps.

### **N.7.3 Local Regulations**

At the local level, water resources are regulated by the counties. On O'ahu, this is the City and County of Honolulu, while on the island of Hawai'i it is Hawai'i County. The State Water Code requires the counties to prepare County Water Use and Development Plans to manage their water resources.

***City and County of Honolulu***

The O‘ahu Integrated Resource Plan (IRP) is a joint project of the Board of Water Supply (BWS), the Department of Planning and Permitting, and the Department of Environmental Services of the City and County of Honolulu, initiated in July 1999. The project is intended to address the water needs of the eight District Planning (DP) areas on O‘ahu. The Board of Water Supply plans to use the IRP process to update the O‘ahu Water Management Plan, which is the name given to the Water Use and Development Plan specified in the Water Code. One of the major new developments proposed in the IRP is to join the now separate water systems on O‘ahu into one combined water system so that in times of excess or shortage, water can be easily transferred from one area to another.

**N.8 BIOLOGICAL RESOURCES*****Endangered Species Act***

The ESA (16 USC §§ 1531-1534) protects plant and animal species (and their habitats) that are listed under the act as threatened or endangered. Endangered species are those in danger of extinction throughout all or a significant portion of their ranges; threatened species are those likely to become endangered within the foreseeable future. The ESA also protects designated critical habitat for listed species. This consists of areas on which are found those physical or biological features essential to the conservation of the species, which may require special management considerations. The ESA requires federal agencies to consult with the USFWS or National Marine Fisheries Service (NMFS), as applicable, before initiating any action that may affect a listed species or critical habitat.

***Migratory Bird Treaty Act***

The Migratory Bird Treaty Act (MBTA) (16 USC §§ 703-712) is domestic legislation implementing international agreements made among the United States and England, Mexico, the former Soviet Union, and Japan to protect migratory bird populations. It protects species of birds that live, reproduce, or migrate within or across international borders at some point during their life cycles.

***Fish and Wildlife Coordination Act and implementing regulations, 16 U.S.C. § 661 – 666c***

Any federal agency that proposes to control or modify any body of water must first consult with the USFWS or NMFS, as appropriate, and with the head of the appropriate state agency exercising administration over the wildlife resources of the affected state. This act is the primary legal authority behind the Birds of Conservation Concern list as identified in the Birds of Conservation Concern 2002 report, issued on December 2002. This conservation list identifies those migratory and non-migratory birds that are not already Federally listed as threatened or endangered, but that require priority concern and action to avoid future listing.

***Fish and Wildlife Conservation Act, 16 U.S.C. § 2901 et seq***

The purpose of this Act is to foster comprehensive wildlife management by encouraging all Federal departments and agencies to use their statutory authorities to conserve and promote the conservation of non-game fish and wildlife and their habitats, consistent with each agency's statutory mission and responsibilities.

***Marine Mammal Protection Act***

The Marine Mammal Protection Act (MMPA) (16 USC §§ 1361-1421h) protects and conserves marine mammal species by placing a moratorium on harassing, hunting, capturing, or killing any marine mammal or attempting any of these. If a project proponent determines that an action could incidentally harass marine mammals, the proponent shall consult with either the USFWS or NMFS to determine if a permit to take a marine mammal is required.

***Magnuson-Stevens Fishery Conservation and Management Act***

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) [amended by the Sustainable Fisheries Act of 1996, Pub. L. 104-267, as codified in scattered sections of 16 USC § 1801 et seq.] applies to fisheries resources and fishing activities in federal waters that extend to 200 miles [322 kilometers] offshore. It addresses conserving and managing US fisheries, developing domestic fisheries, and phasing out foreign fishing activities. It also establishes regional fisheries management councils that set fishing quotas and restrictions in US waters in the form of Fishery Management plans (FMPs). All fish included in a FMP are assigned Essential Fish Habitat (EFH) — those waters and substrate necessary for fish to spawn, breed, feed, or grow to maturity. Federal agencies must consult with the NMFS on proposed actions authorized, funded, or undertaken by the agency that may adversely affect EFH. The act sets forth the enforcement actions that authorized officers may take, including making arrests, boarding, searching, and inspecting fishing vessels and seizing fishing vessels, fish, and other evidence. For more detailed information on FMPs and EFH, refer to Section 3.8.6.

***National Environmental Policy Act***

NEPA requires federal agencies to evaluate the environmental impacts of proposed projects, programs, and policies that could significantly affect the quality of the human environment.

***Marine Protection, Research, and Sanctuaries Act (33 USC 1401-1445)***

This act establishes regulatory guidelines for marine protected areas and restrictions and permit process for ocean dumping.

***Federal Clean Water Act (33 USC §§ 1251-1387)***

The Army Corps of Engineers has primary federal responsibility for administering regulations that concern waters and wetlands. The Corps acts according to the Rivers and Harbors Act (sections 9 and 10), which regulates placement of structures or other work in addition to fill in “navigable waters,” and the Clean Water Act (Section 404), which governs fill in “Waters of the United States,” including wetlands. A Corps permit is required if a project would place structures within navigable waters, of which there are

none in the project area, or if it were to alter waters of the US below the ordinary high water mark in nontidal waters. The Corps does not issue these types of permits in cases where it is the lead agency but instead evaluates the project to determine compliance and acceptability. The primary criteria for evaluating the biological impacts of the Corps permit actions in wetlands is provided by the USEPA, but the mandates of other federal agencies apply as well. Those agencies include, but are not limited to, the USFWS and the NMFS.

Additional enforcement of the Clean Water Act is provided by the State Water Quality Resources Control Board, which must certify that a Corps permit action meets state water quality objectives (Section 401, Clean Water Act).

***AR 200-3 Natural Resources-Land, Forest and Wildlife Management***

This regulation prescribes current Army policies, procedures, and standards for conserving, managing, and restoring land and the renewable natural resources consistent with and in support of the military mission and national policies.

***Executive Order 13089: Coral Reef Protection, and Coral Reef & Coastal Marine Conservation Act of 2001 (HR 22720)***

Executive Order 13089 was signed by President Clinton in order to direct all agencies to increase their efforts to protect our nation's coral reef resources. The executive order calls for the establishment of a US Coral Reef Task Force, co-chaired by the Secretaries of the Interior and of Commerce. The Task Force will develop and implement a comprehensive program of inventory, monitoring, and research, to map and identify the major causes and consequences of degradation of coral reef ecosystems.

***Executive Order 13112: Invasive Species (February 3, 1999)***

Federal agencies whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law, identify such actions (including but not exclusive to); use relevant programs and authorities to: prevent the introduction of invasive species; detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; monitor invasive species populations accurately and reliably; provide for restoration of native species and habitat conditions in ecosystems that have been invaded; and not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions. Federal agencies shall pursue the duties set forth in this section in consultation with the Invasive Species Council, consistent with the Invasive Species Management Plan and in cooperation with stakeholders, as appropriate, and, as approved by the Department of State, when Federal agencies are working with international organizations and foreign nations.

***Executive Order 13158: Marine Protected Areas (May 26, 2000)***

Each Federal agency whose authorities provide for the establishment or management of Marine Protected Areas (MPAs) shall take appropriate actions to enhance or expand

protection of existing MPAs and establish or recommend, as appropriate, new MPAs. Each Federal agency whose actions affect the natural or cultural resources that are protected by an MPA shall identify such actions. To the extent permitted by law and to the maximum extent practicable, each Federal agency, in taking such actions, shall avoid harm to the natural and cultural resources that are protected by an MPA. Each Federal agency that is required to take actions under this order shall prepare and make public annually a concise description of actions taken by it in the previous year to implement the order, including a description of written comments by any person or organization stating that the agency has not complied with this order and a response to such comments by the agency.

***Executive Order 13186: Responsibilities of Federal Agencies To Protect Migratory Birds (January 10, 2001)***

Federal agencies taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within 2 years, a Memorandum of Understanding (MOU) with the Fish and Wildlife Service (USFWS) that shall promote the conservation of migratory bird populations. The conservation intent of the migratory bird conventions should be supported by federal agencies by the following; integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions; and restore and enhance the habitat of migratory birds. Environmental analyses of Federal actions required by the NEPA or other established environmental review processes will evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.

***EO 11990, Protection of Wetlands***

Executive Order 11990 directs all federal agencies to avoid, if possible, adverse effects on wetlands and to preserve and enhance the natural and beneficial values of wetlands. Each agency shall avoid undertaking or assisting in wetland construction projects unless the head of the agency determines that there is no practicable alternative to such construction and that the Proposed Action includes measures to minimize harm.

***EO 13158: Marine Protected Areas (May 26, 2000)***

## **N.9 CULTURAL RESOURCES**

***National Historic Preservation Act of 1966 as Amended (NHPA) (16 USC §§ 470-470x-6)***

Cultural resources on federal lands are protected primarily through the National Historic Preservation Act (NHPA) of 1966 and its implementing regulations (found at 36 CFR 800). Section 106 of the NHPA requires federal agencies to identify and evaluate the effects of their actions on properties listed in or eligible for listing in the National

Register of Historic Places (NRHP). Consultation with the State Historic Preservation Officer (SHPO), Native American tribes, native Hawaiian organizations, the Advisory Council for Historic Preservation, and other interested parties is part of the regulatory process. To be protected under the NHPA, a property must meet specific criteria of significance established under the NHPA's regulations at 36 CFR 60.

***Archaeological Resources Protection Act of 1979 (16 USC §§ 470aa – 470mm)***

This act requires all archaeological excavations on federal land to be undertaken pursuant to permit issued by the federal land manager. This act also imposes criminal penalties for unauthorized excavations.

***Archaeological and Historic Data Preservation Act of 1974 (16 U.S.C. 469-469c)***

This act applies to federal dam construction and other federal construction projects. It requires federal agencies to provide notice to the Secretary of the Interior if any project would result in the irreparable loss of significant archaeological data, and to recover, protect, and preserve such data as possible. This act also provides that up to 1 percent of project funds may be used for survey, recovery, analysis, and publication of such archaeological data.

***Native American Graves Protection and Repatriation Act of 1990, Pub. L. 101-601 (25 USC §§ 3001-3013)***

This act requires federal agencies to identify and inventory possible Native American, native Alaskan, or native Hawaiian human remains, burial goods, or cultural items in their collections and to make them available for repatriation to affiliated tribes or lineal descendants. The act also establishes procedures for handling and disposing of such remains, burial goods, or cultural items discovered on federal lands.

***American Indian Religious Freedom Act of 1978, Pub. L. 95-341, as amended (42 USC §§ 1996-1996a)***

This act extends First Amendment guarantees regarding free exercise of religion to Native Americans, native Alaskans, and native Hawaiians.

***Curation of Federally Owned and Administered Archaeological Collections (36 CFR § 79)***

This regulation provides guidance for the appropriate care and management of materials relating to or excavated from archaeological sites on federal lands.

***Executive Order 13007, Indian Sacred Sites (May 24, 1996)***

EO 13007 requires federal land managers to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites. While EO 13007 does not include Native Hawaiian sacred sites in its protections, AR 200-4 extends to Native Hawaiian sacred sites the same level of protection as that granted to Indian sacred sites under the order.

**N.10 HAZARDS AND HAZARDOUS MATERIALS AND WASTE*****Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC 9601-9675***

Requires reporting of releases and cleanup of releases of hazardous substances; also assigns liability for cleanup.

***Resource Conservation and Recovery Act of 1976, 42 USC 6901-6992k***

Regulates collection, storage, transport, and disposal of hazardous and solid waste and regulates underground storage tanks.

***Federal Facility Compliance Act, 42 USC 6901***

This act provides a waiver of sovereign immunity with respect to all procedural requirements relating to Resource Conservation and Recovery Act (RCRA) solid and hazardous waste laws and regulations at federal facilities. FFCRA gives any state that has an authorized hazardous waste program the authority to inspect any facility that manages hazardous waste, including federal facilities, for the purpose of enforcing the facilities' compliance with the state's program.

**US DOT regulations 49 CFR 100-109** address the interstate shipment of hazardous substances. These regulations specify the proper shipping name, hazard class, and identification number to be used for each material shipped. This information is necessary to ensure proper handling by shipping personnel and identification by emergency personnel if an accident involving hazardous materials should occur. In addition, DOT regulations set guidelines specifying containers suitable for the quantity and chemical characteristics of the hazardous materials that are used. Hawai'i incorporates the DOT regulations under its Revised Statute Section 286 Part XI (Motor Carrier Safety Law) and Section 286 Part XII (Transportation of Hazardous Materials, Hazardous Waste, and Etiologic Agents). Public sea shipments in the region of Hawai'i must be in accordance with Hawai'i Revised Statute Harbor & Tariffs Title 19, Subtitle 3, para. 42-133, Loading and Unloading Hazardous Materials.

**The Hazardous Materials Transportation Act of 1975 (PL 93-633, 49 USC 1801, et seq.)-** gives the DOT authority to regulate shipments of hazardous substances by air, sea, highway, or rail. These regulations, found at 49 CFR 171-180, may govern any safety aspect of transporting hazardous materials, including packing, repacking, handling, labeling, marking, placarding, and routing (other than with respect to pipelines).

***Army Standard Operating Procedures (SOPs)***

The US Army follows strict standard operating procedures for storing and using hazardous materials. All hazardous materials for Oah'u Army installations are stored at the Hazardous Materials Control Center (HMCC) on Schofield Barracks East Range. When an Army unit requests use of a hazardous material, the material is picked up from the HMCC and is transferred to a satellite storage area for immediate use. The HMCC is regulated by an USEPA-approved spill contingency plan (SCP), which contains information about the emergency response procedures in the event of a spill. This is to minimize hazards to human health or the environment from fires, explosions, or any release of hazardous material or its constituents to air, soil, or surface water. The SCP describes actions that site personnel must take to comply with RCRA's emergency procedures, 40 CFR 265, Subparts C and D, Contingency Plan and Emergency Procedures, and 29 CFR 1910.120, Hazardous Waste Site Operations and Emergency Response. A copy of the facility SCP is submitted to all local or federal police departments, fire departments, hospitals, and state and local emergency response teams that may be called on to provide emergency services. All Army facilities that store or use hazardous substances contain a copy of the SCP, and spill kits available for clean up.

***Spill Prevention, Control, And Countermeasure (SPCC) Plans And Pollution Prevention (P2) Plans***

**AR 385-14, Transportation Accident Prevention and Emergency Response Involving Conventional Munitions and Explosives**-applies to the transportation of DOD conventional munitions and explosives (US Army 1991a, 1). The regulation establishes policies, prescribes procedures, and assigns responsibilities for transportation accident prevention and for emergency response measures, when a transportation accident involving DOD conventional munitions and explosives occurs. The regulation applies to all commercial modes of transportation (rail, motor vehicle, air, and water) and all military motor vehicles, both administrative and tactical, transporting munitions and explosives on public highways, including shipments by military carrier. All military vehicles and facilities maintain copies of SPCC plans and spill kits available for clean up.

**Army Pamphlet 385-64, Ammunition and Explosives Safety Standards**-explains the Army's safety criteria and standards for operations involving ammunition and explosives prescribed by AR 385-64, US Army Explosives Safety Program (US Army 1999, i-1). The pamphlet addresses a variety of safety criteria, including, but not limited to, fire prevention, protection, and suppression, explosives quantity-distance, transportation of ammunition and explosives, and electrical hazards, including electromagnetic radiation. These procedures are designed to provide for the safe and proper storage and handling of ammunition and explosives.

The distance between the potential explosion site and the exposed site, the ability of the potential explosion site to suppress blast overpressure, fragments, and debris, and the ability of the exposed site to withstand explosion effects normally determine the damage or injury potential of an explosion (US Army 1999, 33). For the safe storage and transportation of ammunition and explosives, explosive safety quantity-distance requirements are established. These requirements are based on records of actual fires



and explosions involving ammunition and explosives. In addition to protecting Army personnel, the requirements also protect nearby communities and private and public property.

**AR 385-63, Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat (and the draft update of this regulation Army Regulation 385-63, Range Safety Program)**-prescribe general safety precautions to minimize the possibility of accidents in the firing and other uses of ammunition and explosives by troops in training, target practice, and, as much as possible, combat and range operations, including range clearance (US Army 1983a, i-1; Sato. 1996, 5-8). The regulation addresses a multitude of weapons and safety requirements, such as surface danger zones. For the safe use of ammunition and explosives, surface danger zones are established for training areas. Projectiles or debris caused by firing ammunition or explosives must be contained within the surface danger zone's boundaries (US Army 1983a, 2 and 113-114).

### ***Hazardous Waste Management Program***

Wastes are separated into hazardous waste, such as lithium batteries or RCRA chemicals, and non-regulated waste, such as recyclable oil. The hazardous waste is brought to the Hazardous Waste Shop Storage Point (HWSSP), while the recyclable materials are brought to the Recyclable Material Shop Storage Point (RMSSP) (Akasaki 2002b). The US Army follows strict regulations and standard operating procedures for the temporary storage and disposal of hazardous wastes. For example, the Military Munitions Rule (62 FR 6621, 40 CFR 260, et seq.) identifies when military munitions become a hazardous waste under RCRA and provides safe storage and transport of such waste.

All hazardous wastes generated on Army land are first collected at HWSSPs, which are designated areas at or near the point of waste generation. A generator may accumulate as much as 55 gallons of hazardous waste or one quart of acutely hazardous waste listed in 40 CFR 261.33(e) at a HWSSP for up to one year or 55 gallons, whichever ever comes first. Once hazardous waste is accumulated at a HWSSP point, it is relocated to a Transfer Accumulation Point (TAP) after a TAP manager has inspected it. The TAP is a 90-day, regulated storage area for hazardous wastes.

Before 90 days, hazardous waste stored at the TAP site is managed and transported off-site in accordance with 40 CFR 265 Subparts C and D. The TAP manager will coordinate relocating hazardous waste through the DRMO-HI's on-site pickup service. The DRMO-HI contractor is authorized and certified to transport hazardous waste from the TAP with an USEPA transporter identification number. At Schofield Barracks, the HMCC and the TAP facility is a co-located operation that is operated jointly by the Director of Logistics (who manages the useable HM) and the DPW (who manages hazardous waste).

Typical hazardous wastes that are accumulated on base are as follows:

- Silver bearing photo-developing wastes;
- Used oil, oil filters, and oily rags;
- Used antifreeze, coolants, and solvents;
- Used batteries and fluorescent light bulbs; and
- Miscellaneous corrosive liquids.

A detailed 2002 Hazardous Waste Report is provided in Appendix K-1. The report includes wastes generated for all army installations within the project action. The report identifies specific hazardous wastes that have been managed by the DPW and then disposed of by the DRMO as required under 40 CFR 265.

***Hawai'i Hazardous Waste Management Act (HRS Title 19, Health, Chapter 342J)***

Under this act, the state hazardous waste management program provides technical assistance to generators of hazardous waste to ensure safe and proper handling. The hazardous waste management program promotes hazardous waste minimization, reduction, recycling, exchange, and treatment as the preferred methods of managing hazardous waste, with disposal used only as a last resort when all other hazardous waste management methods are ineffective or unavailable. The state program is coordinated with Hawai'i's counties, taking into consideration the unique differences and needs of each county

***Federal Insecticide, Fungicide, and Rodenticide Act, 7 USC 121 et seq.***

The Act requires that all pesticides used in the US be submitted to the USEPA for registration. They must meet USEPA criteria regarding quantity, quality, impact on the environment, and labeling. Federal agencies must implement integrated pest management activities in a manner that provides for the safety of the public, the persons applying the pesticides, and the environment, and must provide for the training and certification of personnel in proper and safe methods of applying, storing, and disposing of pesticides.

***Federal Facilities Compliance Act, 42 USC 6961 et seq.***

The Act provides that all Federal departments and agencies engaged in activities that result in the management or disposal of solid or hazardous waste are subject to and must comply with all Federal, State, interstate, and local requirements pertaining to the control and abatement of such waste in the same manner and to the same extent as a private person.

***Disposal Of Ordnance Under RCRA***

The disposal of ordnance, such as ammunition, is regulated under RCRA. Section 107 of the Federal Facilities Compliance Act of 1992 requires USEPA, in consultation with the DOD and the states, to issue a rule identifying when conventional and chemical military munitions become hazardous waste under RCRA, and to provide for protective storage and transportation of that waste. Basically, this rule explains what is considered a solid waste and the rules for handling that waste (i.e. permitting, labeling, storing,

transporting, and disposal). The final rule also amends existing regulations regarding emergency responses involving both military and non-military munitions and explosives (USEPA, 2002d).

This rule establishes the regulatory definition of solid waste as it applies to three specific categories of military munitions:

- Unused munitions;
- Munitions being used for their intended purpose; and
- Used or fired munitions (which can then be termed either “exploded,” EXO, or “unexploded,” UXO, ordnance).

The rule conditionally exempts:

- From RCRA Manifest Requirements and Container Marking Requirements, waste non-chemical military munitions that are shipped from one military-owned or –operated Treatment, Storage, or Disposal Facility (TSDF) to another in accordance with DOD military munitions shipping controls;
- From RCRA Subtitle C storage regulations, waste non-chemical military munitions subject to the jurisdiction of the DOD Explosives Safety Board storage standards.

### ***Department of the Army Underground Storage Tank Program***

The Department of the Army UST Program not only requires compliance with Federal regulations, but with the more stringent of Army, Federal, State, or local requirements. Current Army standards are cited in “Environmental Protection and Enhancement,” Army Regulation 200-1, Chapter 5-7, dated April 23, 1990. Army policy provides for the removal, repair, or replacement of damaged, leaking, or improperly functioning USTs, ASTs, or associated pollution prevention devices. USTs and ASTs must include monitoring devices for leak detection and be fitted with cathodic protection, catch basins, and overfill warning devices.

### ***Asbestos Management Program***

This program covers hazardous effects from asbestos and includes an annually updated asbestos management plan. The plan contains the USAG-HI Commander’s Asbestos Policy, which delegates responsibilities for asbestos management and five standard operating procedures for handling ACM. The objective of the plan is to provide information necessary to manage friable and nonfriable ACM in on-post USAG-HI facilities. A further objective is to identify those procedures that will minimize the release of ACM into the air (USARHAW 2001c). The Army environmental department also maintains a database of asbestos surveys and results. The database is updated as surveys are finalized (Song 2002). The most recent version of the asbestos survey database for Schofield Barracks, Wheeler Army Airfield, Kahuku TA, Mākua MR, Pōhakuloa TA, and Dillingham MR is available through the Army DPW.

***Radon Reduction Program***

The Army follows a Radon Reduction Program under AR 200-1 to reduce radon exposure of military personnel and civilians. The Army Radon Reduction Program policy ensures that all Army installations and civil works facilities will:

- Comply with legal regulations concerning elevated indoor radon levels applicable to Army operations.
- Maintain and update records of radon assessments conducted under the Army Radon Reduction Program (as identified in DA PAM 200-1).
- Ensure occupants of Priority One facilities which contain elevated radon levels are notified in writing of specific test results, planned or executed mitigation, and results of mitigation efforts. Facility managers will distribute assessment results for Priority Two and Three facilities with elevated radon levels.
- Attach radon test results to real property records. Attach complete record when property is transferred.
- Measure radon in newly constructed Army facilities.
- Measure radon in facilities converted to housing and in continuously occupied structures prior to occupancy.
- Identify elevated radon levels to the Installation Medical Officer or the Civil Works District Safety and Occupational Health Officer.
- Follow US Army Center for Public Works guidance on mitigation of elevated radon levels.
- Use USACE design criteria for radon reduction in new construction.
- Designate their facilities as priority 1,2, or 3 in accordance with definitions and parameters in DA PAM 200-1.

***Biomedical Program***

The Army follows strict guidelines according to AR 200-1 in the handling, use, and disposal of medical, dental, and veterinary supplies. The policy includes:

- Medical, dental, and veterinary supplies or their containers will be disposed of IAW applicable provisions and implementing regulations of the Medical Waste Tracking Act of 1988, state, interstate, and local requirements, and suggested guidelines provided in the Military Item Disposal Instruction (MIDI) System. See DA PAM 200-1 for additional information.
- Medical, dental, and veterinary supplies that are in excess of medical facility requirements will be reported through medical supply channels according to AR 40-61.
- USACHPPM will issue a method of destruction for medical, dental, and veterinary supplies. If the generator does not possess the technical

capability or facilities to dispose of the items, the generator will contact the DRMO for disposal.

- Some medical, dental, and veterinary supplies are RCRA listed or characteristic waste. These items must be managed and disposed of as a hazardous waste.
- DRMO disposes of all items in Federal supply classes 6505, 6556, 6600 and 6800. This will include routine destruction/disposal of hazardous material and nonhazardous controlled material. DRMO does not accept regulated medical or radioactive waste.
- Health care facility wastes will be handled, stored, treated, and disposed of, per AR 40-5, AR 40-61 and other applicable regulations.